

# PATENT SPECIFICATION



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## PROVISIONAL SPECIFICATION

### Improvements in Hinge-struts for Supporting Hinged Lids of Cabinets and the like

I, ERNEST JOHN LESLIE BROOK, a British Subject, of Icknield Square, Monument Road, Birmingham, 16, do hereby declare the nature of this invention to be as follows:—

The invention has reference to a hinge-strut, for supporting the hinged-lid of a cabinet, box or the like, particularly the lid of a gramophone cabinet, of that kind comprising two hinged-together elbow-like arms whose free ends are pivotally attached to the lid and body of the article respectively.

According to the invention such a hinge-strut embodies as a component part of it one or more springs, such as coiled compression springs, arranged to substantially balance the weight of the hinged lid in all positions, namely fully open and fully closed, and in any intermediate position.

It is preferable to use two springs, of the same or dissimilar power, the one within the other, said springs to operate together and give a sensitive and even balance of the lid.

The springs are disposed so as to be put into increasing power gradually as the lid closes from substantially vertical to horizontal position, and to hold the lid both closed and open and in any intermediate position and, preferably, by definite friction stops in fully open and closed positions.

The two arms are hinged together with an elbow form of joint, and adjacent the hinging pin one of said arms is provided with a cam-surface having a stop seating at each end of it, while at the one end of the spring action a roller is provided to press against the cam surface and against the seatings.

One of the two arms is formed by two connected plates each having in it a longitudinal channel combining to constitute a housing for the spring, or springs, permitting of its, or their, free operation.

Further according to the invention the hinge-strut, aforesaid, is provided with frictional resistance at the elbow joint, this frictional resistance being provided about the hinging pin and, preferably, by opposed frictional surfaces between the two arms set up to each other by screw operation; fibre or other frictional washers being used if desired.

In an embodiment of the invention the one arm is constituted by a single plate pivoted at one end to a bracket and its other end forming part of the elbow joint, a cam surface and two seatings being provided upon the edge of this plate. The other arm is provided by two plates attached to each other coincidently and having within each of them a longitudinal channel to house the spring, the free end of this arm being connected to the usual attachment bracket, and the other end forming part of the elbow joint.

Two coiled compression springs are used in the housing, the one within the other and having opposed coils, that is to say if the outer one is a right hand coil, the left hand one is of left hand coil, the one ends of these springs abutting against the one end of the housing, and the other ends against an abutment block or yoke carrying a roller to press against the cam edge and against the seatings.

When the hinge-strut is closed the springs are in fullest compression and operative in that seating of the cam edge which directs the spring action to that side of the hinging pin of the elbow joint holding the lid in closed position.

When the lid is open the springs are of least power.

Dated this 31st day of March, 1939.

For the Applicants:

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## COMPLETE SPECIFICATION

**Improvements in Hinge-struts for Supporting Hinged Lids of Cabinets and the like**

I, ERNEST JOHN LESLIE BROOK, a British Subject, of Icknield Square, Monument Road, Birmingham, 16, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

10 The invention has reference to a hinge-strut of that kind comprising two rigidly built arms hinged together elbow-like and whose free ends are adapted to be pivotally attached to the lid and body respectively of a gramophone or other cabinet, box or the like to support the lid from the body in opened positions.

Frictional resistance of an adjustable kind has been applied to the elbow joint of such a support.

20 A hinge-strut according to the invention has upon one of its arms adjacent the hinging a cam or eccentric surface, and upon its other arm a spring-unit adapted to press against said cam surface, preferably by roller contact, with pressure varying in relation to the swing of one arm to the other by the action of said cam surface. The spring of the unit is desirably a coiled compression spring,

25 and it is preferable to use two such springs in the unit of dissimilar power, the one arranged within the other to operate together and provide a sensitive spring action.

30 Also according to the invention the cam surface at each of its ends is provided with a stop-seating within which the spring unit presses to more definitely hold the arms in fully opened and fully closed 40 positions.

Further according to the invention the one arm is formed of two plate-like members shaped with a longitudinal channel to freely house the spring unit, 45 and the other arm with the cam surface and seatings is constituted by a single plate-like member.

In one form of the invention frictional resistance of an adjustable kind is applied 50 to the elbow-joint of the two arms.

A desirable arrangement of the invention is illustrated by the accompanying drawings.

Fig. 1 is a side elevation showing the 55 hinge-strut applied.

Fig. 2 is a section across Fig. 1 at A—A, on a larger scale.

Fig. 3 is an edge view of one arm and its attachment bracket.

Fig. 4 is an edge view of the other arm 60 and its attachment bracket.

Fig. 5 is a detail of a slidable abutment lock, separately.

Fig. 6 is a side view of Fig. 5.

Fig. 7 is a detail of the spring unit 65 separately.

The hinge-strut is shown applied to the body 1 and lid 2 of a gramophone or similar cabinet, said body and lid being hinged together at 3 in the ordinary way. 70 The primary parts of the hinge-strut are the rigidly built arms 4 and 5 with their attachment brackets 6 and 7 and their elbow-joint hinging to each other at 8 and their pivotings at 9 and 10 to the 75 brackets 6 and 7.

The arm 5 is constituted by a single plate provided adjacent its hinging to the other arm 4 with a cam surface 11 and two seatings 12 and 13 formed on the edge of this plate, and clearly shown by Figs. 1, 2 and 4.

80 The other arm 4 is provided by plates 14 and 15 attached to each other coincidentally and having within each of them a longitudinal channel 16 to combine to freely house the compression spring unit 17 whose one end 18 abuts against the one end of the housing and whose other end is provided with a slidable abutment 85 block 19 working freely in the housing and carrying a roller 20 to contact the cam edge 11 and the seatings 12 and 13.

90 The two arms and the spring unit operate so that the spring unit is put into increasing power gradually as the lid 2 closes, and is in fullest compression when fully closed with the spring action to that side of the hinging 8 holding the lid closed, the roller 20 being in engagement 100 with the seating 12.

95 It is preferable to use as the compression spring unit two coil springs either of the same or dissimilar power and the one arranged within the other to operate 105 together for a sensitive action, these two springs having opposed coils, i.e. if the coils of the outer one 21 are right-hand, the coils of the inner one 22 are left-hand, or vice-versa.

110 The elbow-joint hinging 8 is provided with frictional resistance of an adjustable kind. Two friction discs 23 and 24 are arranged about the hinging pin 25 and within the two plates 14 and 15, and the hinged end of the arm 5 is disposed between these two discs, the pin 25 being a pull-up one operating from the nut 26

to adjust the amount of friction at the joint.

The elbow-joint hinging 8 may be plain hinging.

5 Having now particularly described and ascertained the nature of our said invention and in what manner the same is to be performed, we declare that what we claim is:—

- 10 1. A hinge-strut of the kind referred to, wherein one of the arms adjacent the hinging is provided with a cam or eccentric surface, and the other arm with a spring-unit adapted to press against said cam surface, preferably by roller contact, with a pressure varying in relation to the swing of the one arm to the other by the action of said cam surface.
- 15 2. A hinge-strut according to claim 1 and wherein at each of its ends the cam surface is provided with a stop seating for co-operation with the spring unit.
- 20 3. A hinge-strut according to claim 1 or 2, and wherein one arm is formed of two plate-like members shaped with a longitudinal channel to freely house the

spring unit, and the other arm is constituted by a single plate-like member having upon its edge the cam surface and 30 the seatings.

4. A hinge-strut according to claim 1, 2 or 3 and wherein two compression springs form the spring unit, the one arranged within the other and preferably 35 being of opposed coiling.

5. A hinge-strut according to any one of the preceding claims, and wherein frictional resistance of an adjustable kind is applied to the elbow-joint of the two 40 arms.

6. A hinge-strut in accordance with claim 3, 4 or 5 and wherein the arms are constructed and applied to each other and the spring unit arranged, substantially as described with reference to the drawings.

Dated this 29th day of March, 1940.

For the Applicants:

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*[This Drawing is a reproduction of the Original on a reduced scale.]*

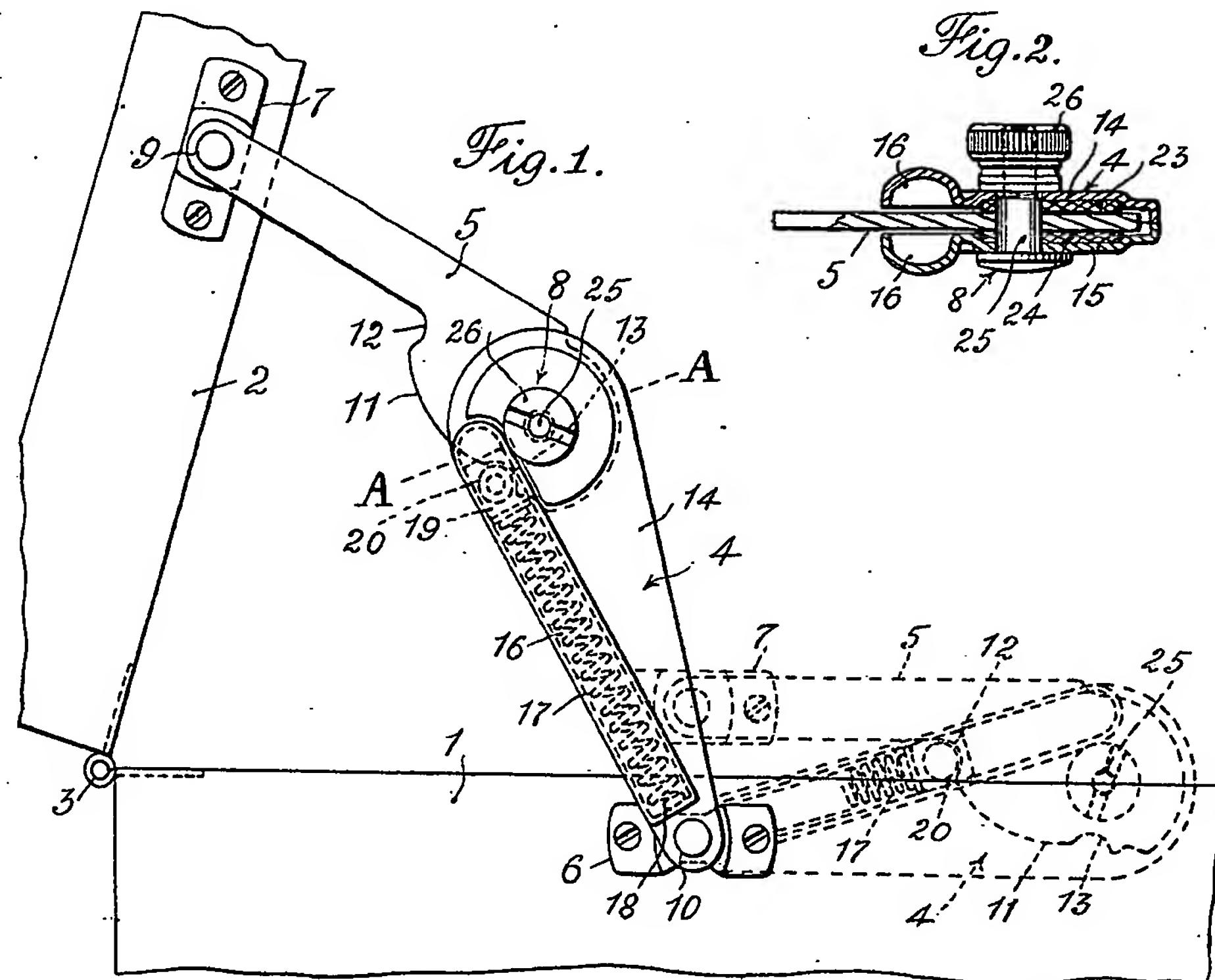


Fig. 1.

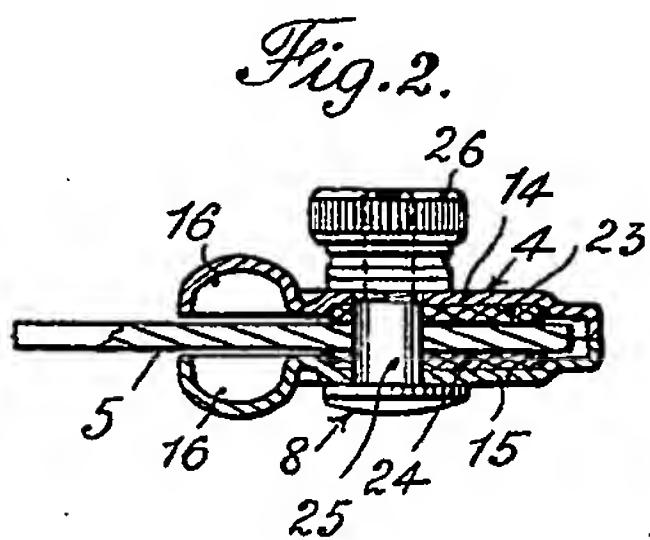


Fig. 2.

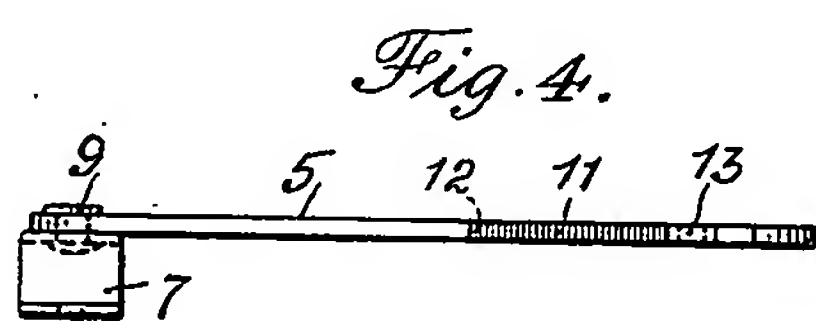


Fig. 4.

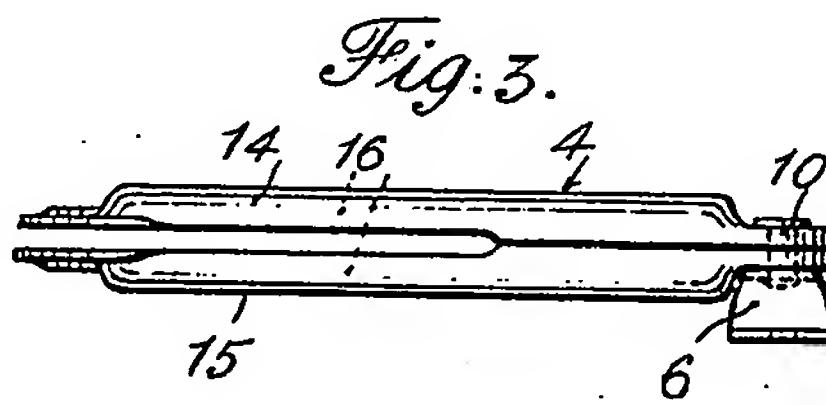


Fig. 3.

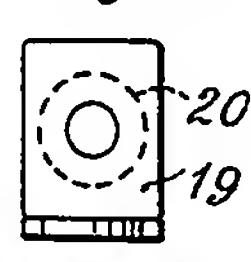


Fig. 6.

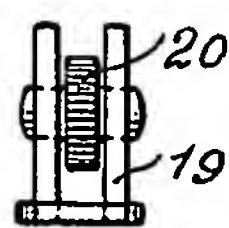


Fig. 5.

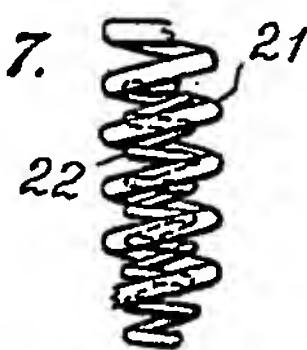


Fig. 7.